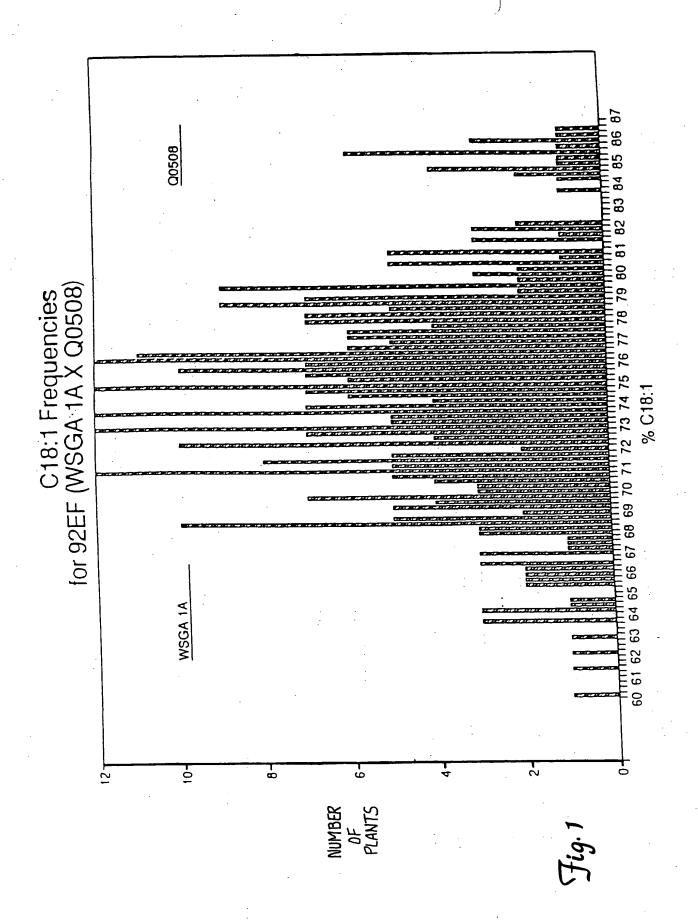
Matter No.: 07148-063004 Page 1 of 1
Applicant(s): Lorin R. DeBonte et al.
FATTY ACID DESATURASES AND MUTANT SEQUENCES
THEREOF

Page 1 of 14



<u>س</u>			
	ຫຼ	ហ្	
IMC 125	IMC 125	IMC 125	IMC 125
Q508	Q508	Q508	Q508
Q4275	Q4275	Q4275	Q4275
wt	wt	wt	wt
(GA316)	(GA316)	(GA316)	(GA316)
wt	wt	wt	wt
(TA515)	(TA515)	(TA515)	(TA515)
(GA908)	(GA908)	(GA908)	(GA908)
Fad2-D	Fad2-D	Fad2-D	Fad2-D
Fad2-D	Fad2-D	Fad2-D	Fad2-D
Fad2-F	Fad2-F	Fad2-F	Fad2-F
Fad2-F	Fad2-F	Fad2-F	Fad2-F
TGGGTGCAGGTGGAAGAATGCAAGTGTCTCCTCCTCCA TGGGTGCAGGTGGAATGCAAGTGTCTCCTCCTCCA TGGGTGCAGGTGGAATGCAAGTGTCTCCTCCTCCA TGGGTGCAGGTGGAAGAATGCAAGTGTCTCCTCCTCCA TGGGTGCAGGTGGAAGAATGCAAGTGTCTCCTCCTCCA	ৰ ৰ ৩ ৩ ৩	ACACCGCCTTCACTGTCGGAGAACTCAAGAAAGCAATCACACCGCCTTCACTGTCGGAGAACTCAAGAAAGCAATCACCGCCTTCACTGTCGGAGAACTCAAGAAAGCAATCAACCGCCTTCACTGTCGGAGAACTCAAGAAAGCAATCAACCGCCTTCACTGTCGGAGAACTCAAGAAGCAATCAACCGCCTTCACTGTCGGAGAACTCAAGAAGCAATCAACCCGCCTTCACTGTCGGAGAACTCAAGAAAGCAATC	130 140 150 160 160 160 160 160 160 160 160 160 16
_ 4444	41 A	81 G	121 C 121 C 121 C 121 C 121 C 121 C

			•
IMC 125	IMC 125	IMC 125	IMC 125
Q508	Q508	Q508	Q508
Q4275	Q4275	Q4275	Q4275
wt	wt	wt	wt
(GA316)	(GA316)	(GA316)	(GA316)
wt	wt	wt	wt
(TA515)	(TA515)	(TA515)	(TA515)
(GA908)	(GA908)	(GA908)	(GA908)
Fad2-D	Fad2-D	Fad2-D	Fad2-D
Fad2-D	Fad2-D	Fad2-D	Fad2-D
Fad2-F	Fad2-F	Fad2-F	Fad2-F
Fad2-F	Fad2-F	Fad2-F	Fad2-F
CCTACCTCATCTGGGACATCATAGCCTCCTGCTTCTA CCTACCTCATCGGGACATCATCATAGCCTCCTGCTTCTA CCTACCTCATCTGGGACATCATCATAGCCTCCTGCTTCTA CCTACCTCATCTGGGACATCATCATAGCCTCCTGCTTCTA CCTACCTCATCTGGGACATCATCATAGCCTCCTGCTTCTA CCTACCTCATCTGGGACATCATCATAGCCTCCTGCTTCTA	210 220 230 240 CTACGTCGCCACTTACTTCCCTCCCTCACCCT CTACGTCGCCACCTTACTTCCCTCTCCTCACCCT CTACGTCGCCACTTACTTCCCTCTCCTCACCT CTACGTCGCCACTTACTTCCCTCTCCTCACCT CTACGTCGCCACCACTTACTTCCCTCCCTCACCCT CTACGTCGCCACCTTACTTCCCTCCCTCACCCT	250 260 270 280 280 270 280 CT CT CT A CT G G C CT G C C A G G C T C T C T C T C T G G C C T G C C A G G C T C T C T C T C T C T G C C T G C C A G G C T C T C T A CT G G C C T G C C A G G C T C T C T A CT G G C C T G C C A A G C T C T C T C T A CT G G C C T G C C A A G C T C T C T C T A CT G G C C T G C C A A G C T C T C T C T A CT G G C C T G C C A A G C T C T C T A CT G G C C T G C C A A G C T C T C T A CT G G C C T G C C A A G C T C T C T A CT G G C C T G C C A A G C T C T C T C T A CT G G C C T G C C A A G C T C T C T C T A CT G G C C T G C C A A G C T C T C T C T A CT T C G C C A A G C T C T C T C T A CT G G C C T G C C A A G C T C T C T A CT T G G C C T G C C A A G C T C T C T C T A CT T C T A CT T G G C C T G C C A A G C T C T C T A CT T G G C C T G C C A A G C T C T C T A CT T G G C C T G C C A A G C T C T C T A CT T G G C C T G C C A A G C T C T C T C T A CT T G G C C T G C C A A G C T C T C T C T A CT T G G C C T G C C A A G C T C T C T A CT T G G C C T G C C A A G C T C T C T C T A CT T G G C C T G C C A A G C T C T C T A CT T A CT T G C C T G C C A A G C T C T C T C T A CT T G G C C T G C C A A G C T C T C T C T A CT T G C C T G C C A A G C T C T C T C T A CT T G G C C T G C C A A G C T C T C T C T A CT T G G C C T G C C A A G C T C T C T C T C T A CT T G G C C T G C C A A G C T C T C T C T C T A CT T G G C C T G C C T G C C T G C C T C T	320 GCTGCGTCCTAACCGGCGTCTGGGTCATAGCCCACGAGTGGCTGTGCTGCTTAGCCCACGAGTGGCTGTGGGTCATAGCCCACGAGTGGCTGGTGTGGTGTGGTGTGGTGTGGTGTGGTGTGGGTCATAGCCCACGAGTGGGTGTGTGGGTCATAGCCCACGAGTGGGTGTGTGGGTCATAGCCCACGAGTGGGTGTGTGGGTCATAGCCCACGAGTGGGTGTGTGGGTCATAGCCCACGAGTGGGTGTGTGGGTCATAGCCCACGAGTGGGTGTGTGGTGTTGGGTCATAGCCCACGAGTG
161 161 161 161	201 201 201 201 201	241 241 241 241 241	281 281 281 281 281

Matter No.: 07148-063004

Applicant(s): Lorin R. DeBonte et al.
FATTY ACID DESATURASES AND MUTANT SEQUENCES
THEREOF

Page 4 of 14

. 125 .	125	129 5	129
IMC 12	IMC 17	IMC 13	IMC 12
Q508	Q508	Q508	Q508
Q4275	Q4275	Q4275	Q4275
wt	wt	wt	wt
(GA316)	(GA316)	(GA316)	(GA316)
wt	wt	wt	wt
(TA515)	(TA515)	(TA515)	(TA515)
(GA908)	(GA908)	(GA908)	(GA908)
Fad2-D	Fad2-D	Fad2-D	Fad2-D
Fad2-D	Fad2-D	Fad2-D	Fad2-D
Fad2-F	Fad2-F	Fad2-F	Fad2-F
Fad2-F	Fad2-F	Fad2-F	Fad2-F
330 340 350 360 CGGCCACCACGCTTCAGCGACTACCAGTGGCTGGACGAC CGGCCACCACGCTTCAGCGACTACCAGTGGCTGGACGAC CGGCCACCACGCTTCAGCGACTACCAGTGGCTTGACGAC CGGCCACCACGCTTCAGCGACTACCAGTGGCTTGACGAC CGGCCACCACGCCTTCAGCGACTACCAGTGGCTTGACGAC	ACCGTCGGCCTCATCCTTCCTTCCTCCTCGTCCTT ACCGTCGGCCTCATTCCACTCCTTCCTCGTCCTT ACCGTCGGCTCATTCCACTCCTTCCTCGTCCTT ACCGTCGGTCTCATCTTCCACTCCTTCCTCGTCCTTT ACCGTCGGTCTCATCTTCCACTCCTTCCTCGTCCTTTTTTCCACTCCTTCTTTTTTTT	410 420 430 440 A CTTCTCCTGGAAGTACAGTCATCGACGCCACCATTCCAA A CTTCTCCTGGAAGTACAGTCATCGACGCCACCATTCCAA A CTTCTCTCTGGAAGTACAGTCATCGACGCCACCATTCCAA A CTTCTCTCTGGAAGTACAGTCATCGACGCCACCATTCCAA A CTTCTCTCTGGAAGTACAGTCATCGACGCCACCATTCCAA A CTTCTCTCTGGAAGTACAGTCATCGACGCCACCATTCCAA	450 460 470 480 480 6A G T T T G T C C C C A A G C A A G T G T T T G T C C C C A A G C A A G T G T T T G T C C C C A A G C A C T C G A G A G A C G A A G T G T T T G T C C C C A A G C A C T C G A G A G A C G A A G T G T T T G T C C C C A A G C A C T C G A G A G A C G A A G T G T T T G T C C C C A A G C A C T C G A G A G A C G A A G T G T T T G T C C C C A A G C A C T C G A G A G A C G A A G T G T T T G T C C C C A A G C A C T G G C T C G A G A G A C G A A G T G T T T G T C C C C A A G C A C T G G C T C C C C A A G C A C T G G C T C C C C A A G C A C T G G C T C C C C C A A G C A C T G G C T C C C C A A G C A C T G G C T C C C C A A G C A C T G G C T C C C C A A G C A C T G G C T C C C C A A G C A C T G G C T C C C C A A G C A C T G G C T C C C C A A G C A C T G G C T C C C C A A G C A C T G G C T C C C C A A G C A C T G G C T C C C A A G A C G A A G T G T T T G T C C C C A A G C A C T G G C T C C C A A G A C G A A G T G T T T G T C C C C A A G C A C T G G C T C G A G A G A G A C G A A G T G T T T G T C C C C A A G C A C T G G C T C G A G A G A G A C G A A G T G T T T G T C C C C C A A G C A C T G G C T C G A G A G A G A C G A A G T G T T T G T C C C C C A A G C A C T G G C T C G A G A G A G A C G A A G T G T T T G T C C C C C A A G T G T T T G T C C C C C A A G T G T T T G T C C C C C A A G A C T G C T C C T C G A G A G A C G A A G T G T T T G T C C C C C C A C A C A C A C A C A C A
321 321 321 321 321	361 361 361 361	401 401 401 401	1

Page 5 of 14

Matter No.: 07148-063004 Page 5 of 1 Applicant(s): Lorin R. DeBonte et al. FATTY ACID DESATURASES AND MUTANT SEQUENCES THEREOF

								•	•	
	IMC 129	Q508 Q4275		IMC 129	Q508 Q4275		IMC 129	Q508 Q4275	IMC 129 Q508	
	wt (GA316)	(TA515) (GA908)		wt (GA316)	wt (TA515) (GA908)		wt (GA316)	wt (TA515) (GA908)	wt (GA316) wt (TA515)	(20,045)
	Fad2-D Fad2-D	Fad2-F Fad2-F		Fad2-D Fad2-D	Fad2-F Fad2-F Fad2-F		Fad2-D Fad2-D	Fad2-F Fad2-F Fad2-F		Fad2-F
490 500 510 520	AAGAAGTCAGACATCAAGTGGTACGGCAAGTACCTCAACA AAGAAGTCAGACATCAAGTGGTACGGCAAGTACCTCAACA	AAGAAGTCAGACATCAAGTGGTACGGCAAGIACCICAACA AAGAAGTCAGACATCAAGTGGTACGGCAAGTACCAACA	530	ACCCTTTGGGACGCACCGTGATGTTAACGGTTCAGTTCA	ACCCTTTGGGACGCACCGTGATGTTAACGGTTCAGTTCA	570	TCTCGGCTGGCCTTTGTACTTAGCCTTCAACGTCTCGGGG	TCTCGGCTGGCCGTTGTACTTAGCCTTCAACGTCTCGGGA TCTCGGCTGGCCGTTGTACTTAGCCTTCAACGTCTCGGGA TCTCGGCTGGCCGTTGTACTTAGCCTTCAACGTCTCGGGA	AGACCTTACGACGGCGGCTTCGCTTGCCATTTCCACCCAAAAAAAA	AGACCTTACGACGGCGGCTTCGCTTGCCATTTCCACCC
	481 481	481		521	521 521 521		561	561 561 561 561	601 601 601	601

Page 6 of 14

Matter No.: 07148-063004 Page 6 of 1 Applicant(s): Lorin R. DeBonte et al. FATTY ACID DESATURASES AND MUTANT SEQUENCES THEREOF

							*						
	IMC 129	Q508 Q4275		IMC 129	8050	Q4275		IMC 129	Q508 Q4275		IMC 129	Q508 Q4275	
٠.	A316)	wt (TA515) (GA908)		Fad2-D wt Fad2-D (GA316)	wt (TA515)	(GA908)	٠	Fad2-D wt Fad2-D (GA316)	wt (TA515) (GA908)		Fad2-D wt Fad2-D (GA316)	wt (TA515) (GA908)	
		Fad2-F Fad2-F Fad2-F		Fad2-D Fad2-D	Fad2-F Fad2-F	Fad2-F		Fad2-D Fad2-D	Fad2-F Fad2-F Fad2-F			Fad2-F Fad2-F Fad2-F	
	CGCTCCCATCTACAACGACCGTGAGCGTCTCCAGATATA CGCTCCCATCTACAACGACCGTGAGCGTCTCCAGATATA	A C G C T C C C A T C T A C A A C G A C C G C G A G C G T C T C C A G A T A T A A A C G A C C G C G A G C G T C T C C A G A T A T A A A C G A C C G C G A G C G T C T C C A G A T A T A A A C G A C C G C G A G C G T C T C C A G A T A T A A A C G A C C G C G A G C G T C T C C A G A T A T A A A C G A C C G C G A G C G T C T C C A G A T A T A A A C G A C C G C G A G C G T C T C C A G A T A T A A A C G A C C G C G A G C G T C T C C A G A T A T A A A C G A C C G C G A G C G T C T C C A G A T A T A A A C G A C C G C G A G C G T C T C C A G A T A T A A A C G A C C G C G A G C G T C T C C A G A T A T A A A C G A C C G C G A G C G T C T C C A G A T A T A A A A C G A C C G C G A G C G T C T C C A G A T A T A A A C G A C C G C G A G C G T C T C C A G A T A T A A A A C G A C C G C G A G C G T C T C C A G A T A T A A A C G A C C G C G A G C G T C T C C A G A T A T A A A C G A C C G C G A G C G T C T C C A G A T A T A A A C G A C C G C G A G C G T C T C C A G A T A A A C G A C C G C G A G C G T C T C C A G A T A A C G A C C G C G A G C G T C T C C A G A T A A C G A C C G C G C G T C T C C C A G A T A A C G A C C G C G C G C G T C T C C C A G A T A A C G A C C G C C G C G C G T C T C C C A G A T A A C G A C C G C C G C G C G T C C C C C C C C C	690 700 710	ATCTCCGACGCCATCCTCGCCGTCTGCTACGGTCTC	TCTGCTACGGTCTC TCTGCTACGGTCTC	AICICCGACGCTGCATCCTCGCCGTCTGCTACGGTCTC		ACCGCTACGCTGTCCAAGGAGTTGCCTCGATGGTCT	G G C C T C G A T G G T C T G G C C T C G A T G G T C T G G C C T C G A T G G T C T		770 780 CTTCTAGGGGTTCTT CTGATGGGGTTCTT CTTCTTCTTCTTCTTCTTCTTCTTCTTCTTCTTC	CTGATTGTCAATGGTTTCCT CTGATTGTCAATGGTTTCCT CTGATTGTCAATGGTTTCCT	
	641	641 641 641		& a	681	စေ		721	721 721 721	721	761	761 761 761	761

Matter No.: 07148-063004 Page 7 of 1
Applicant(s): Lorin R. DeBonte et al.
FATTY ACID DESATURASES AND MUTANT SEQUENCES
THEREOF

			•
IMC 125 Q508 Q4275	IMC 125 Q508 Q4275	IMC 125 Q508 Q4275	IMC 125 Q508 Q4275
wt (GA316) wt (TA515) (GA908)	wt (GA316) wt (TA515) (GA908)	wt (GA316) wt (TA515) (GA908)	wt (GA316) wt (TA515) (GA908)
Fad2-D Fad2-D Fad2-F Fad2-F	Fad2-D Fad2-D Fad2-F Fad2-F	Fad2-D Fad2-D Fad2-F Fad2-F Fad2-F	Fad2-D Fad2-D Fad2-F Fad2-F Fad2-F
810 820 830 840 AGTTTTGATCACTTGCAGCACACGCATCCTTCCCTG AGTTTTGATCACTTACTTGCAGCACACGCATCCTTCCCTG CGTGTTGATCACTTACTTGCAGCACACGCATCCTTCCCTG CGTGTTGATCACTTACTTGCAGCACACGCATCCTTCCCTG CGTGTTGATCACTTACTTGCAGCACACGCATCCTTCCCTG	850 860 870 880 880 870 880 CCTCACTATGACTCGTCTGAGTGGGATTGGTTGAGGGAGG	890 900 900 900 920 CTTTGACAGAGACTACGGAATCTTGAACAACTTTGGACTACGGAATCTTGAACAACTTTGGACTACGGAATCTTGAACAACTTTGGCTTTGACAGAGACTACGGAATCTTGAACAACTTTGGCTACGGTTGACAGAGACTACGGAATCTTGAACAACTTTGGCTACGTTGACAGAGACTACGGAATCTTGAACAA	940 950 950 960 950 960 950 950 960 950 960 950 950 950 950 950 950 950 950 950 95
801 801 801 801	841 841 841 841	881 881 881 881 881	921 921 921 921

Matter No.: 07148-063004 Page 8 of 1
Applicant(s): Lorin R. DeBonte et al.
FATTY ACID DESATURASES AND MUTANT SEQUENCES
THEREOF

		•
IMC 129 Q508 Q4275	IMC 129 Q508 Q4275	IMC 129 Q508 Q4275
Fad2-D wt Fad2-D (GA316) Fad2-F wt Fad2-F (TA515) Fad2-F (GA908)	wt (GA316) wt (TA515) (GA908)	Fad2-D wt Fad2-D (GA316) Fad2-F wt Fad2-F (TA515) Fad2-F (GA908)
0 Fad2-D wt Fad2-P (G Fad2-F wt Fad2-F (T	Fad2-D Fad2-D Fad2-F Fad2-F	0
980 TGCCGCATTATCATGCGATGGAAGCTA TGCCGCATTATCATGCGATGGAAGCTA TGCCGCATTATCACGCGATGGAAGCTA TGCCGCATTATCACGCGATGGAAGCTA TGCCGCATTATCACGCGATGGAAGCTA TGCCGCATTATCACGCGATGGAAGCTA	1020 1030 1040 G C C G A T A C T G G G A G A G T A T T A T C A G T T T T A T C A G T T T A T C A G T T T T A T C A G T T T T A T C A G T T T T A T C A G T T T T A T C A G T T T T T T C A G T T T T T T C A G T T T T T T C A G T T T T T T C A G T T T T T T C A G T T T T T T C A G T T T T T T C A G T T T T T T C A G T T T T T T C A G T T T T T T C A G T T T T T T T C A G T T T T T T C A G T T T T T T C A G T T T T T T T C A G T T T T T T T T T T T T T T T T T T	1060 1070 1080 GTGGTTAAGGCGATGTGGAGGGGGGGGGGGGGGGGGGGG
970 CTGTTCTCGACCA CTGTTCTCGACGA CTGTTCTCCACGA CTGTTCTCCACGA CTGTTCTCCACGA CTGTTCTCCACGA	1010 CGAAGGCGATAAA 1001 CGAAGGCGATAAA 1001 CCAAGGCGATAAA 1001 CCAAGGCGATAAA	1041 CGATGGGACGCG 1041 CGATGGGACGCG 1041 CGATGGGACGCG 1041 CGATGGGACGCG 1041 CGATGGGACGCG
961 961 961 961	äääää	

Matter No.: 07148-063004 Page 9 of 1 Applicant(s): Lorin R. DeBonte et al. FATTY ACID DESATURASES AND MUTANT SEQUENCES THEREOF

	IMC 129 Q508 Q4275	IMC 129 Q508 Q4275
0	Fad2-D wt Fad2-D (GA316) Fad2-F wt Fad2-F (TA515) Fad2-F (GA908)	Fad2-D wt Fad2-D (GA316) IMC Fad2-F wt Fad2-F (TA515) Q508 Fad2-F (GA908) Q427
1090 1110 1120	081 AAGGAGTGTATCTATGTGGAACCGGACAGGCAAGGTGAGA 081 AAGGAGTGTATCTATGTGGAACCGGACAGGCAAGGTGAGA 081 AAGGAGTGTATCTATGTGGAACCGGACAGGCAAGGTGAGA 081 AAGGAGTGTATCTATGTGGAACCGGACAGGCAAGGTGAGA 081 AAGGAGTGTATCTATGTGGAACCGGACAGGCAAGGTGAGA	1130 1140 1150 121 AGAAAGGTGTTCTGGTACAATAAGTTATGA 121 AGAAAGGTGTTCTGGTACAATAAGTTATGA 121 AGAAAGGTGTTCTGGTACAATAAGTTATGA 121 AGAAAGGTGTTCTGGTACAATAAGTTATGA 121 AGAAAGGTGTTCTGGTACAATAAGTTATGA
	000000	33333

Matter No.: 07148-063004 Page 10 of 1
Applicant(s): Lorin R. DeBonte et al.
FATTY ACID DESATURASES AND MUTANT SEQUENCES

THEREOF

		G	
IMC129 Q508 Q4275	IMC129 Q508 Q4275	IMC129 Q508 Q4275	IMC129 Q508 Q4275
wt (GA316) wt (TA515)	wt (GA316) wt (TA515)	wt (GA316) wt (TA515)) wt (GA316) wt (TA515)
Fad2-D Fad2-D Fad2-F Fad2-F	Fad2-D Fad2-D Fad2-F Fad2-F	Fad2-D Fad2-D Fad2-F Fad2-F Fad2-F	Fad2-D Fad2-F Fad2-F Fad2-F
Met Gly Ala Gly Gly Arg Met Gln Val Ser Pro Pro Ser Lys Lys Ser Glu Thr Asp Asn Met Gly Ala Gly Gly Arg Met Gln Val Ser Pro Pro Ser Lys Lys Ser Glu Thr Asp Asn Met Gly Ala Gly Gly Arg Met Gln Val Ser Pro Pro Ser Lys Lys Ser Glu Thr Asp Thr Met Gly Ala Gly Gly Arg Met Gln Val Ser Pro Pro Ser Lys Lys Ser Glu Thr Asp Thr Met Gly Ala Gly Gly Arg Met Gln Val Ser Pro Pro Ser Lys Lys Ser Glu Thr Asp Thr Met Gly Ala Gly Arg Met Gln Val Ser Pro Pro Ser Lys Lys Ser Glu Thr Asp Thr	Ile Lys Arg Val Pro Cys Glu Thr Pro Pro Phe Thr Val Gly Glu Leu Lys Lys Ala Ile Ile Lys Arg Val Pro Cys Glu Thr Pro Pro Phe Thr Val Gly Glu Leu Lys Lys Ala Ile Ile Lys Arg Val Pro Cys Glu Thr Pro Pro Phe Thr Val Gly Glu Leu Lys Lys Ala Ile Ile Lys Arg Val Pro Cys Glu Thr Pro Pro Phe Thr Val Gly Glu Leu Lys Lys Ala Ile Ile Lys Arg Val Pro Cys Glu Thr Pro Pro Phe Thr Val Gly Glu Leu Lys Lys Ala Ile Ile Lys Arg Val Pro Cys Glu Thr Pro Pro Phe Thr Val Gly Glu Leu Lys Lys Ala Ile Ile Lys Arg Val Pro Cys Glu Thr Pro Pro Phe Thr Val Gly Glu Leu Lys Lys Ala Ile	Pro Pro His Cys Phe Lys Arg Ser Ile Pro Arg Ser Phe Ser Tyr Leu Ile Trp Asp Ile Pro Pro Pro His Cys Phe Lys Arg Ser Ile Pro Arg Ser Phe Ser Tyr Leu Ile Trp Asp Ile Pro Pro Pro His Cys Phe Lys Arg Ser Ile Pro Arg Ser Phe Ser Tyr Leu Ile Trp Asp Ile Pro Pro Pro His Cys Phe Lys Arg Ser Ile Pro Arg Ser Phe Ser Tyr Leu Ile Trp Asp Ile Pro Pro His Cys Phe Lys Arg Ser Ile Pro Arg Ser Phe Ser Tyr Leu Ile Trp Asp Ile Pro Pro Pro His Cys Phe Lys Arg Ser Ile Pro Arg Ser Phe Ser Tyr Leu Ile Trp Asp Ile	Ile Ile Ala Ser Cys Phe Tyr Tyr Val Ala Thr Thr Tyr Phe Pro Leu Leu Pro His Pro Ile Ile Ala Ser Cys Phe Tyr Tyr Val Ala Thr Thr Tyr Phe Pro Leu Leu Pro His Pro Ile Ile Ala Ser Cys Phe Tyr Tyr Val Ala Thr Thr Tyr Phe Pro Leu Leu Pro His Pro Ile Ile Ala Ser Cys Phe Tyr Tyr Val Ala Thr Thr Tyr Phe Pro Leu Leu Pro His Pro Ile Ile Ala Ser Cys Phe Tyr Tyr Val Ala Thr Thr Tyr Phe Pro Leu Leu Pro His Pro Ile Ile Ala Ser Cys Phe Tyr Tyr Val Ala Thr Thr Tyr Phe Pro Leu Leu Pro His Pro Ile Ile Ala Ser Cys Phe Tyr Tyr Val Ala Thr Thr Tyr Phe Pro Leu Leu Pro His Pro Ile Ile Ala Ser Cys Phe Tyr Tyr Val Ala Thr Thr Tyr Phe Pro Leu Leu Pro His Pro Ile Ile Ala Ser Cys Phe Tyr Tyr Val Ala Thr Thr Tyr Phe Pro Leu Leu Pro His Pro
ннннн	21 21 21 21 21 21	4 4 4 4	61 61 61 61

Matter No.: 07148-063004 Page 11 of 1
Applicant(s): Lorin R. DeBonte et al.
FATTY ACID DESATURASES AND MUTANT SEQUENCES
THEREOF

					•											
	IMC129	Q508	04275		IMC129	8050	04275		IMC129	0508	04275	·	IMC129	Q508 04275	i : : :	
	Fad2-D wt Fad2-D (GA316)		Fad2-F (GA908)		Fad2-D wt Fad2-D (GA316)	Fad2-F wt Fad2-F (TA515)	Fad2-F (GA908)		Fad2-D wt Fad2-D (GA316)		-			Fad2-F wt Fad2-F (TA515)	rauz-r (Groco)	
90	Ser Tyr Phe Ala Trp Pro Leu Tyr Trp Ala Cys Gln Gly Cys Val Leu Thr Gly Val	Ala Cys Gln Gly Cys Val Leu Thr Gly Val Ala Cys Gln Gly Cys Val Leu Thr Gly Val	Ser Tyr Phe Ala Trp Pro Leu Tyr Trp Ala Cys Gln Gly Cys Val Leu Thr Gly Val	110	Trp Val Ile Ala His Glu Cys Gly His His Ala Phe Ser Asp Tyr Gln Trp Leu Asp Asp	Trp Val Ile Ala His Glu Cys Gly His His Ala Phe Ser Asp Tyr Gln Trp Leu Asp Asp	Trp Val Ile Ala His Glu Cys Gly His His Ala Phe Ser Asp Tyr Gln Trp Leu Asp Asp	130	Thr Val Gly Leu Ile Phe His Ser Phe Leu Leu Val Pro Tyr Phe Ser Trp Lys Tyr Ser	Thr Val Gly Leu lie rue his Ser rue Leu Val Pro Tyr Phe Ser Trp Lys Tyr Ser Thr Val Gly Leu lie Phe His Ser Phe Leu Val Dro Tyr Phe Ser Trp Lys Tyr Ser	Thr Val Gly Leu Ile Phe His Ser Phe Leu Leu Val Fro Tyr Phe Ser Trp Lys Tyr Ser Thr Val Gly Leu Ile Phe His Ser Phe Leu Leu Val Pro Tyr Phe Ser Trp Lys Tyr Ser	150	His Arg Arg His His Ser Asn Thr Gly Ser Leu Glu Arg Asp Glu Val Phe Val Pro Lys	His Arg Arg His His Ser Asn Thr Gly Ser Leu Glu Arg Asp Glu Val Phe Val Pro Lys us arg Arg His His Ser Asn Thr Gly Ser Leu Glu Arg Asp Glu Val Phe Val Pro Lys	His Arg Arg His His Ser Asn Thr Gly Ser Leu Glu Arg Asp Glu Val Phe Val Pro Lys	
	81	81	81		10	101	10		12	12	121 121		14	141 141	14.	



Matter No.: 07148-063004 Page 12 of 1 Applicant(s): Lorin R. DeBonte et al. FATTY ACID DESATURASES AND MUTANT SEQUENCES THEREOF

	·	•	
IMC129	IMC129	IMC129	IMC129
Q508	Q508	Q508	Q508
Q4275	Q4275	Q4275	Q4275
wt	wt	wt	wt
(GA316)	(GA316)	(GA316)	(GA316)
wt	wt	wt	wt
(TA515)	(TA515)	(TA515)	(TA515)
(GA908)	(GA908)	(GA908)	(GA908)
Fad2-D	Fad2-D	Fad2-D	Fad2-D
Fad2-D	Fad2-D	Fad2-D	Fad2-D
Fad2-F	Fad2-F	Fad2-F	Fad2-F
Fad2-F	Fad2-F	Fad2-F	Fad2-F
170 180 161 Lys Lys Ser Asp Ile Lys Trp Tyr Gly Lys Tyr Leu Asn Asn Pro Leu Gly Arg Thr Val 161 Lys Lys Ser Asp Ile Lys Trp Tyr Gly Lys Tyr Leu Asn Asn Pro Leu Gly Arg Thr Val 161 Lys Lys Ser Asp Ile Lys Trp Tyr Gly Lys Tyr Leu Asn Asn Pro Leu Gly Arg Thr Val 161 Lys Lys Ser Asp Ile Lys Trp Tyr Gly Lys Tyr His Asn Asn Pro Leu Gly Arg Thr Val 161 Lys Lys Ser Asp Ile Lys Trp Tyr Gly Lys Tyr His Asn Asn Pro Leu Gly Arg Thr Val 161 Lys Lys Ser Asp Ile Lys Trp Tyr Gly Lys Tyr Leu Asn Asn Pro Leu Gly Arg Thr Val	190 200 181 Met Leu Thr Val Gln Phe Thr Leu Gly Trp Pro Leu Tyr Leu Ala Phe Asn Val Ser Gly 181 Met Leu Thr Val Gln Phe Thr Leu Gly Trp Pro Leu Tyr Leu Ala Phe Asn Val Ser Gly 181 Met Leu Thr Val Gln Phe Thr Leu Gly Trp Pro Leu Tyr Leu Ala Phe Asn Val Ser Gly 181 Met Leu Thr Val Gln Phe Thr Leu Gly Trp Pro Leu Tyr Leu Ala Phe Asn Val Ser Gly 181 Met Leu Thr Val Gln Phe Thr Leu Gly Trp Pro Leu Tyr Leu Ala Phe Asn Val Ser Gly	220 Arg Pro Tyr Asp Gly Gly Phe Ala Cys His Phe His Pro Asn Ala Pro Ile Tyr Asn Asp 201 Arg Pro Tyr Asp Gly Gly Phe Ala Cys His Phe His Pro Asn Ala Pro Ile Tyr Asn Asp 201 Arg Pro Tyr Asp Gly Gly Phe Ala Cys His Phe His Pro Asn Ala Pro Ile Tyr Asp Asp 201 Arg Pro Tyr Asp Gly Gly Phe Ala Cys His Phe His Pro Asn Ala Pro Ile Tyr Asn Asp 201 Arg Pro Tyr Asp Gly Gly Phe Ala Cys His Phe His Pro Asn Ala Pro Ile Tyr Asn Asp 201 Arg Pro Tyr Asp Gly Gly Phe Ala Cys His Phe His Pro Asn Ala Pro Ile Tyr Asn Asp	Arg Glu Arg Leu Gln Ile Tyr Ile Ser Asp Ala Gly Ile Leu Ala Val Cys Tyr Gly Leu 221 Arg Glu Arg Leu Gln Ile Tyr Ile Ser Asp Ala Gly Ile Leu Ala Val Cys Tyr Gly Leu 221 Arg Glu Arg Leu Gln Ile Tyr Ile Ser Asp Ala Gly Ile Leu Ala Val Cys Tyr Gly Leu 221 Arg Glu Arg Leu Gln Ile Tyr Ile Ser Asp Ala Gly Ile Leu Ala Val Cys Tyr Gly Leu 221 Arg Glu Arg Leu Gln Ile Tyr Ile Ser Asp Ala Gly Ile Leu Ala Val Cys Tyr Gly Leu 221 Arg Glu Arg Leu Gln Ile Tyr Ile Ser Asp Ala Gly Ile Leu Ala Val Cys Tyr Gly Leu 221 Arg Glu Arg Leu Gln Ile Tyr Ile Ser Asp Ala Gly Ile Leu Ala Val Cys Tyr Gly Leu
		•	

Page 13 of 14

Matter No.: 07148-063004 Page 13 of 1 Applicant(s): Lorin R. DeBonte et al. FATTY ACID DESATURASES AND MUTANT SEQUENCES THEREOF

	•	•		<u>.</u>
	IMC129 Q508 Q4275	IMC129 Q508 Q4275	IMC129 Q508 Q4275	IMC129 Q508 Q4275
	wt (GA316) wt (TA515) (GA908)	wt (GA316) wt (TA515) (GA908)	wt (GA316) wt (TA515) (GA908)	wt (GA316) wt (TA515) (GA908)
	Fad2-D Fad2-D Fad2-F Fad2-F	Fad2-D Fad2-D Fad2-F Fad2-F	Fad2-D Fad2-D Fad2-F Fad2-F Fad2-F	Fad2-D Fad2-D Fad2-F Fad2-F Fad2-F
250	241 Tyr Arg Tyr Ala Ala Val Gln Gly Val Ala Ser Met Val Cys Phe Tyr Gly Val Pro Leu 241 Tyr Arg Tyr Ala Ala Val Gln Gly Val Ala Ser Met Val Cys Phe Tyr Gly Val Pro Leu 241 Phe Arg Tyr Ala Ala Ala Gln Gly Val Ala Ser Met Val Cys Phe Tyr Gly Val Pro Leu 241 Phe Arg Tyr Ala Ala Gln Gly Val Ala Ser Met Val Cys Phe Tyr Gly Val Pro Leu 241 Phe Arg Tyr Ala Ala Gln Gly Val Ala Ser Met Val Cys Phe Tyr Gly Val Pro Leu 241 Phe Arg Tyr Ala Ala Gln Gly Val Ala Ser Met Val Cys Phe Tyr Gly Val Pro Leu	270 280 261 Leu Ile Val Asn Gly Phe Leu Val Leu Ile Thr Tyr Leu Gln His Thr His Pro Ser Leu 261 Leu Ile Val Asn Gly Phe Leu Val Leu Ile Thr Tyr Leu Gln His Thr His Pro Ser Leu 261 Leu Ile Val Asn Gly Phe Leu Val Leu Ile Thr Tyr Leu Gln His Thr His Pro Ser Leu 261 Leu Ile Val Asn Gly Phe Leu Val Leu Ile Thr Tyr Leu Gln His Thr His Pro Ser Leu 261 Leu Ile Val Asn Gly Phe Leu Val Leu Ile Thr Tyr Leu Gln His Thr His Pro Ser Leu 261 Leu Ile Val Asn Gly Phe Leu Val Leu Ile Thr Tyr Leu Gln His Thr His Pro Ser Leu	Pro His Tyr Asp Ser Ser Glu Trp Asp Trp Leu Arg Gly Ala Leu Ala Thr Val Asp Arg 81 Pro His Tyr Asp Ser Ser Glu Trp Asp Trp Leu Arg Gly Ala Leu Ala Thr Val Asp Arg 81 Pro His Tyr Asp Ser Ser Glu Trp Asp Trp Leu Arg Gly Ala Leu Ala Thr Val Asp Arg 81 Pro His Tyr Asp Ser Ser Glu Trp Asp Trp Leu Arg Gly Ala Leu Ala Thr Val Asp Arg 81 Pro His Tyr Asp Ser Ser Glu Trp Asp Trp Leu Arg Gly Ala Leu Ala Thr Val Asp Arg 81 Pro His Tyr Asp Ser Ser Glu Trp Asp Trp Leu Arg Gly Ala Leu Ala Thr Val Asp Arg 81 Pro His Tyr Asp Ser Ser Glu Trp Asp Trp Leu Arg Gly Ala Leu Ala Thr Val Asp Arg	310 320 321 301 Asp Tyr Gly Ile Leu Asn Lys Val Phe His Asn Ile Thr Asp Thr His Val Ala His His 301 Asp Tyr Gly Ile Leu Asn Lys Val Phe His Asn Ile Thr Asp Thr His Val Ala His His 301 Asp Tyr Gly Ile Leu Asn Lys Val Phe His Asn Ile Thr Asp Thr His Val Ala His His 301 Asp Tyr Gly Ile Leu Asn Lys Val Phe His Asn Ile Thr Asp Thr His Val Ala His His 301 Asp Tyr Glu Ile Leu Asn Lys Val Phe His Asn Ile Thr Asp Thr His Val Ala His His 301 Asp Tyr Glu Ile Leu Asn Lys Val Phe His Asn Ile Thr Asp Thr His Val Ala His His
	(A (A (A (A (A	00000	00000	



Matter No.: 07148-063004 Page 14 of 1 Applicant(s): Lorin R. DeBonte et al. FATTY ACID DESATURASES AND MUTANT SEQUENCES THEREOF

Page 14 of 14

			·	·
	IMC129 Q508 Q4275	IMC129 Q508 Q4275	IMC129 Q508 Q4275	IMC129 Q508 Q4275
•	Fad2-D wt Fad2-D (GA316) Fad2-F wt Fad2-F (TA515) Fad2-F (GA908)	Fad2-D wt Fad2-D (GA316) Fad2-F wt Fad2-F (TA515) Fad2-F (GA908)	Fad2-D wt Fad2-D (GA316) Fad2-F wt Fad2-F (TA515)	Fad2-D wt Fad2-D (GA316) Fad2-F wt Fad2-F (GA908)
340		350 341 Leu Gly Glu Tyr Tyr Gln Phe Asp Gly Thr Pro Val Val Lys Ala Met Trp Arg Glu Ala B41 Leu Gly Glu Tyr Tyr Gln Phe Asp Gly Thr Pro Val Val Lys Ala Met Trp Arg Glu Ala F341 Leu Gly Glu Tyr Tyr Gln Phe Asp Gly Thr Pro Val Val Lys Ala Met Trp Arg Glu Ala F341 Leu Gly Glu Tyr Tyr Gln Phe Asp Gly Thr Pro Val Val Lys Ala Met Trp Arg Glu Ala F341 Leu Gly Glu Tyr Tyr Gln Phe Asp Gly Thr Pro Val Val Lys Ala Met Trp Arg Glu Ala F341 Leu Gly Glu Tyr Tyr Gln Phe Asp Gly Thr Pro Val Val Lys Ala Met Trp Arg Glu Ala F341 Leu Gly Glu Tyr Tyr Gln Phe Asp Gly Thr Pro Val Val Lys Ala Met Trp Arg Glu Ala F341 Leu Gly Glu Tyr Tyr Gln Phe Asp Gly Thr Pro Val Val Lys Ala Met Trp Arg Glu Ala	370 361 Lys Glu Cys Ile Tyr Val Glu Pro Asp Arg Gln Gly Glu Lys Lys Gly Val Phe Trp Tyr F 361 Lys Glu Cys Ile Tyr Val Glu Pro Asp Arg Gln Gly Glu Lys Lys Gly Val Phe Trp Tyr F 361 Lys Glu Cys Ile Tyr Val Glu Pro Asp Arg Gln Gly Glu Lys Lys Gly Val Phe Trp Tyr F 361 Lys Glu Cys Ile Tyr Val Glu Pro Asp Arg Gln Gly Glu Lys Lys Gly Val Phe Trp Tyr F 361 Lys Glu Cys Ile Tyr Val Glu Pro Asp Arg Gln Gly Glu Lys Lys Gly Val Phe Trp Tyr F 361 Lys Glu Cys Ile Tyr Val Glu Pro Asp Arg Gln Gly Glu Lys Lys Gly Val Phe Trp Tyr F 501 Lys Glu Cys Ile Tyr Val Glu Pro Asp Arg Gln Gly Glu Lys Lys Gly Val Phe Trp Tyr F	381 Asn Asn Lys Leu ter
	миший	м м м м	. <u>ოოოოო</u>	ים בונים בחים